

Title (en)
Compliant parallel manipulator system

Title (de)
Nachgiebiges Parallelrobotersystem

Title (fr)
Système de manipulateur parallèle souple

Publication
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Application
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Abstract (en)

The invention provides a Compact XYZ Compliant Parallel Manipulator with Well-Constrained Parasitic Rotations. The invention provides a compliant parallel manipulator system comprising: a motion stage controlled by three linear actuators, mounted on a base adapted to produce three output translations, characterised by three leg support portions, each leg comprising a compliant active P joint, connected to the base and adapted to be actuated by a linear actuator, and a compliant passive PP RR chain, connected to the motion stage.

IPC 8 full level

B25J 7/00 (2006.01); **B25J 17/02** (2006.01)

CPC (source: EP)

B25J 7/00 (2013.01); **B25J 17/0266** (2013.01)

Citation (applicant)

- US 4635887 A 19870113 - HALL KENNETH F [GB], et al
- LI, Y.; XU, Q.: "A Totally Decoupled Piezo-Driven XYZ Flexure Parallel Micropositioning Stage for Micro/Nanomanipulation", IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING., vol. 8, no. 2, 2011, pages 265 - 279, XP011352672, DOI: doi:10.1109/TASE.2010.2077675
- YUE, Y.; GAO, F.; ZHAO, X.; GE, Q.: "Relationship among Input-Force, Payload, Stiffness and Displacement of a 3-DOF Perpendicular Parallel Micro-Manipulator", MECHANISM AND MACHINE THEORY, vol. 45, no. 5, 2010, pages 756 - 771, XP026923724, DOI: doi:10.1016/j.mechmachtheory.2009.12.006
- AWTAR, S.; USTICK, J.; SEN, S.: "An XYZ Parallel Kinematic Flexure Mechanism with Geometrically Decoupled Degrees of Freedom", PROCEEDINGS OF THE ASME 2011 INTERNATIONAL DESIGN ENGINEERING TECHNICAL CONFERENCES & COMPUTERS AND INFORMATION IN ENGINEERING CONFERENCE, 2011
- YUN, Y.; LI, Y.: "Optimal Design of a 3PUPU Parallel Robot with Compliant Hinges for Micromanipulation in a Cubic Workspace", ROBOTICS AND COMPUTER-INTEGRATED MANUFACTURING, vol. 27, no. 6, 2011, pages 977 - 985, XP028234857, DOI: doi:10.1016/j.rcim.2011.05.001
- AWTAR, S.; PARMAR, G.: "Design and a Large Range XY Nanopositioning System", PROCEEDINGS OF THE ASME 2010 INTERNATIONAL DESIGN ENGINEERING TECHNICAL CONFERENCES & COMPUTERS AND INFORMATION IN ENGINEERING CONFERENCE, 2010

Citation (search report)

- [I] QINCHUAN LI ET AL: "Structural Shakiness of Nonoverconstrained Translational Parallel Mechanisms With Identical Limbs", IEEE TRANSACTIONS ON ROBOTICS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 25, no. 1, 1 February 2009 (2009-02-01), pages 25 - 36, XP011332805, ISSN: 1552-3098, DOI: 10.1109/TRO.2008.2006869
- [I] ZHONGFEI WANG ET AL: "A family of spatial translational parallel robots", INTELLIGENT CONTROL AND AUTOMATION, 2008. WCICA 2008. 7TH WORLD CONGRESS ON, IEEE, PISCATAWAY, NJ, USA, 25 June 2008 (2008-06-25), pages 2326 - 2332, XP031301252, ISBN: 978-1-4244-2113-8
- [I] QINCHUAN LI ET AL: "Parallel Mechanisms With Bifurcation of Schoenflies Motion", IEEE TRANSACTIONS ON ROBOTICS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 25, no. 1, 1 February 2009 (2009-02-01), pages 158 - 164, XP011332814, ISSN: 1552-3098, DOI: 10.1109/TRO.2008.2008737
- [A] GOGU G: "Singularity-free fully-isotropic parallel manipulators with Schonflies motions", ADVANCED ROBOTICS, 2005. ICAR '05. PROCEEDINGS., 12TH INTERNATIONAL CONFERENCE ON SEATTLE, WA, USA JULY 18-20, 2005, PISCATAWAY, NJ, USA, IEEE, 18 July 2005 (2005-07-18), pages 194 - 201, XP010836925, ISBN: 978-0-7803-9178-9, DOI: 10.1109/.2005.1507412
- [A] QINGSONG XU ET AL: "Novel design of a totally decoupled flexure-based XYZ parallel micropositioning stage", ADVANCED INTELLIGENT MECHATRONICS (AIM), 2010 IEEE/ASME INTERNATIONAL CONFERENCE ON, IEEE, PISCATAWAY, NJ, USA, 6 July 2010 (2010-07-06), pages 866 - 871, XP031855698, ISBN: 978-1-4244-8031-9

Cited by

CN104985587A; CN106863262A; CN109108948A; CN111993394A; CN110883761A; CN113319829A; CN113352304A; CN110480604A; CN114198481A

Designated contracting state (EPC)

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